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CHRONICLE OF THE WORLD HEALTH ORGANIZATION

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THE WORK OF WHO : 1955

A Review of the Annual Report of the Director-General

In 1955 the World Health Organization " achieved substantial results " in its programmes of assistance to governments in controlling communicable diseases, strengthening health services, and training health personnel of all types. The improvement of environmental sanitation remained a fundamental concern in many countries and the object of WHO-aided projects in all parts of the world, particularly in the economically under-developed areas. Increased attention was paid to some of the principal problems of the economically advanced countries—problems such as cancer, cardiovascular disorders, and the public health implications of the aging of the population.

By the end of the year, WHO had mapped out a suggested programme of work in a comparatively new field: the peaceful uses of atomic energy.

Throughout the year the Organization continued to render technical services, on a world-wide scale, with regard to epidemiology and health statistics, drugs and other therapeutic substances, and public-health laboratory work.

* * *

In the Annual Report of the Director-General for 1955,* the detailed list of projects assumes much greater importance than in previous reports; it has, in fact, become the core of the record of work accomplished. For this reason, condensed project lists form part of each major section in the review which follows.

COMMUNICABLE DISEASES

1955 saw important developments in the control of several of the communicable diseases with which WHO is most concerned, developments which are bound to have considerable effect on the work of the Organization in the future.

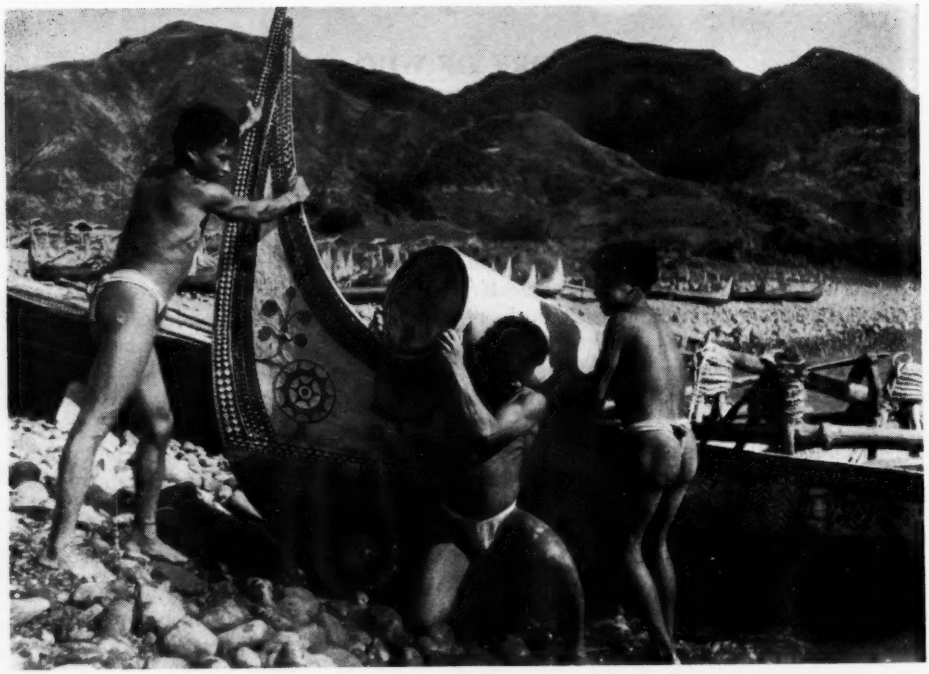
Malaria

In malaria, increasing heed had to be paid to earlier warnings about a need for change in strategy because of the resistance of vector anophelines to insecticides. Most significant was a resolution of the Eighth World Health Assembly which called for WHO initiative, technical advice, and encouragement and co-ordination of research in a programme having as its ultimate aim the world-wide eradication of malaria.

In addition to continuing aid to malaria-control projects in many parts of the world, the Organization promoted laboratory study of insecticide resistance, undertook " operational research " as part of field projects, and co-ordinated investigations, begun in previous years, on the sorption of insecticides sprayed on mud walls.

* World Health Organization (1956) *The work of WHO, 1955: annual report of the Director-General to the World Health Assembly and to the United Nations* (*Off. Rec. Wld Hlth Org.*, 67), Geneva. xii+241 pages. Price: 10/-, $2.00, or Sw. fr. 6.—. Published in English, French, and Spanish.

FIG. 1. MALARIA CONTROL IN TAIWAN



Unloading supplies of DDT on the beach at Lan-Yu (Orchid Island, Taiwan).

One of the WHO-assisted demonstration and training projects which came to an end in 1955 was that in Burma, which had begun in Lashio in 1951 and had later been extended to the Maymyo area, where emphasis was on training activities. Its threefold aim, typical of most WHO projects, was (*a*) to set up a demonstration and training centre for malaria control, (*b*) to make a preliminary malaria survey, and (*c*) to train staff for the national malaria organization. The Organization provided the services of a malariologist, an entomologist, and a sanitarian. The work accomplished in 1955 has been summarized thus:

A preliminary malariometric survey was made in thirty-six villages in the Maymyo area; 690 children were examined for enlarged spleen and malaria parasites. Several villages in the area were sprayed with DDT water-dispersible powder.

Many trainees of various categories completed their training; they will be employed in the country-wide malaria-control programme, which is expected to last five years.

The entomologist visited the Lashio area, where the WHO team completed its work in 1954, to find whether DDT spraying for the last four years had caused resistance to DDT to develop in the local vector.

Tuberculosis

Tuberculosis-control techniques began to undergo a "revolution", thanks to the advent of effective antimicrobial therapy. The Annual Report draws attention to the

far-reaching effects and implications of the innovations in this domain:

> Many of the traditional methods of treatment of pulmonary tuberculosis are being discarded: medical and surgical collapse therapy is being replaced by partial or total resection of the lung; even the value of bed rest is debated, particularly for patients with no clinical symptoms.
>
> In countries where enough beds are available for tuberculous patients, many cases—even those newly diagnosed—are being treated outside institutions... increasing numbers of physicians are convinced that hospitalization is no longer essential for successful treatment. In some countries this has led to a transfer of responsibility: the management of the tuberculous patient has devolved more and more on general practitioners, and they have not always been well prepared to undertake it. The systematic education of medical students and practitioners in tuberculosis has thus become very important...
>
> Now, for the first time, effective domiciliary drug treatment of infectious cases, mass immunization and possibly chemoprophylaxis with an inexpensive drug such as isoniazid, may bring a systematic programme of control within the reach of almost any health administration.

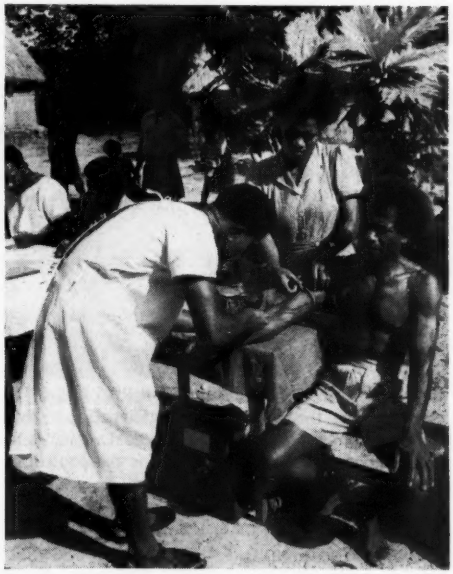
For WHO, these developments may mean radical changes in programme. The Organization is assisting in research projects which should eventually answer some of the questions now being posed. In South-East Asia, for example, a five-year project is being undertaken to study the effects of domiciliary treatment with antituberculosis drugs, and to compare this method with the same treatment given in hospital. Some aspects of chemoprophylaxis with isoniazid will also be investigated.

During 1955 the Organization concentrated particularly on developing satisfactory techniques for surveys of tuberculosis; assisting governments to make such surveys; finding the solutions for problems relative to simple, practical, and inexpensive measures for tuberculosis-control programmes; and helping governments to carry out BCG vaccination campaigns. It initiated a study of mycobacteria isolated from patients in tropical areas and proceeded with special studies on tuberculin testing and BCG vaccination.

Treponematoses and venereal infections

WHO continued to assist governments in carrying out mass treatment campaigns against yaws and syphilis, aiming not only at control of these diseases, but also at promoting the establishment of rural health services into which the treponematoses-control activities might eventually be incorporated. By the end of 1955, more than 50 million persons had been examined and 15 million treated in WHO-aided mass campaigns against the treponematoses.

FIG. 2. TREPONEMATOSES IN THE FIJI ISLANDS



Aspect of a campaign in Fiji undertaken with assistance from WHO and UNICEF.

The Organization was also concerned during the year with the co-ordination of research and studies on the reactivity of freeze-dried sera from syphilitics and non-syphilitics with a view to establishing international reference preparations for such

sera, and on the relative efficacy of different types of penicillin in the treponematoses. Close attention was paid to signs that the treponemes might be developing resistance to penicillin, and to sensitization reactions. Neither of these possibilities seemed as yet to be of significance in the population groups treated in WHO-assisted yaws or endemic-syphilis campaigns. Reactions to penicillin are much more likely to occur in the economically developed areas, where the use of the antibiotic is more common.

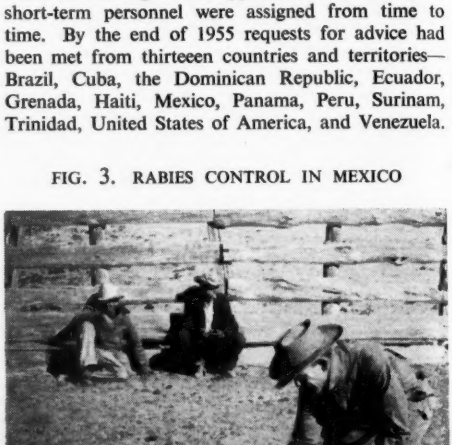
Zoonoses and veterinary public health

Highlights of the year's activities in zoonoses were the completion of a clinical field trial of hyperimmune antirabies serum in Iran; further study of the role of bats in the transmission of rabies; progress in the development of a vaccine against *Brucella melitensis* infection in sheep and goats; and termination and publication of a WHO-sponsored survey of the geographical distribution of Q fever.

The Annual Report gives a summary account of rabies-control work in the Americas, tracing progress and activities since 1949:

> In November 1949, in response to requests from the Governments of Mexico and the United States of America, the Organization assigned a rabies consultant to the border area of the United States and Mexico to co-ordinate work for the control of rabies and to assist in the training of personnel. Some eighty-five people of various technical grades were trained, compaigns against canine rabies were started, measures for the control of predatory animals were demonstrated, and study was begun on the complicated problem of rabies in bats.
>
> In June 1952, under an agreement with the Government of Mexico, the antirabies work was extended to the whole country... An important feature of this project was the provision of technical assistance for the large-scale production of avianized antirabies vaccine, as a result of which the Instituto de Investigaciones Pecuarias, Palo Alto, Mexico, supplied at a low cost the vaccines needed by the campaigns for vaccinating dogs and cattle. This supply was later extended to other countries.
>
> By January 1954 requests for assistance with rabies problems were so varied that an inter-country project...was started to cover all aspects of rabies control, including the work in the Mexico-United States area. The public-health veterinarian for Zone II and a mammalogist were appointed to this work and short-term personnel were assigned from time to time. By the end of 1955 requests for advice had been met from thirteeen countries and territories—Brazil, Cuba, the Dominican Republic, Ecuador, Grenada, Haiti, Mexico, Panama, Peru, Surinam, Trinidad, United States of America, and Venezuela.

FIG. 3. RABIES CONTROL IN MEXICO



Injection of poison into a donkey's carcass, for use as bait to kill wolves and coyotes, which are an important reservoir of rabies virus in some areas.

The work done by the end of 1955, and that planned for the immediate future, are described below.

The technical assistance provided for campaigns against canine rabies has ranged from simple personal consultation to assistance in preparing the complete plan of operations for a national campaign. The main subjects of inquiries have been effective control of stray dogs, legislation and procedures for the licensing and vaccination of dogs, and education of the public.

In addition to the work on bats, there were demonstrations of the best measures for the elimination of predatory and other wild animals, to check the

spread of sylvatic rabies. In co-operation with the chief of the Predatory and Rodent Branch of the United States Fish and Wildlife Service, forty-one poison stations were chosen in four states of northern Mexico and about 700 kilograms of poisoned donkey meat were set out. These demonstrations cover an area of approximately 1 000 000 hectares and it is estimated that some 17 000 wolves and coyotes have been killed, and the reservoir of rabies virus to that extent reduced. In Grenada (Windward Islands) the consultant assisted in a survey of sylvatic rabies and advised on control of the mongoose, the probable local reservoir of the virus.

More information on rabies in vampire bats and the recent discovery in various parts of the United States of America and Mexico of evidence of rabies infection in insectivorous and fructivorous bats have led to increased study of vampire and other bats and their part in the rabies problem. Since its initial work on rabies in 1949, the Organization has continued its study of the distribution and migration of bats. The information gathered has been reported from time to time in technical journals and is being collated for issue in a " bat atlas "...

Advice and assistance have been given on the determination of the need for prophylactic treatment in man, and on treatment regimes. Short courses, with emphasis on laboratory techniques, have been given by project staff for laboratory workers, epizootiologists, epidemiologists, physicians and veterinarians, and preliminary arrangements were made for a regional rabies training course to be held in 1956.

Assistance has also been given to start, improve and test the production of phenolized vaccine for dogs, avianized vaccine for dogs and for cattle, human vaccine, and hyperimmune serum.

FIG. 4. POLIOMYELITIS IN ISRAEL

Rehabilitation of a paralytic case under a demonstration and training scheme started with the help of WHO and UNICEF at Sarafand, near Tel-Aviv.

Virus, rickettsial, and other communicable diseases

One of the more important health developments of the year was the demonstration of the possibility of producing in the laboratory a safe and reasonably effective vaccine against poliomyelitis. Unfortunate accidents with the use of certain lots of commercially prepared vaccine temporarily postponed large-scale campaigns. In November 1955, WHO called a meeting of leading experts from nine countries to summarize the present state of knowledge and to put before the Director - General the essential facts on which future public-health application of poliomyelitis vaccination, under different epidemiological conditions, might be based. The report resulting from this meeting has been published by the Organization.[1] WHO continued its programme of study of poliomyelitis, designating regional poliomyelitis laboratories in all regions.

A major problem of the control of smallpox in hot countries is the instability of glycerinated lymph on exposure to high temperatures. Some dried vaccines, but not all, have greatly increased thermostability. As a result of laboratory and field tests sponsored by

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1956, **101**

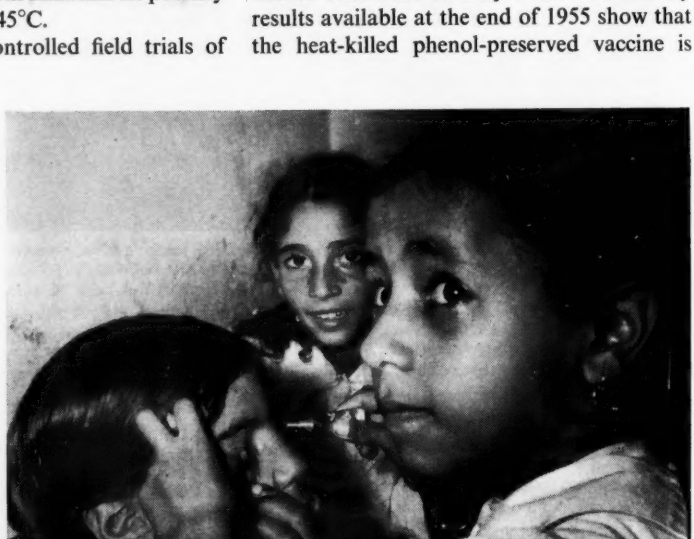
FIG. 5.
PLAGUE IN INDIA

Unloading traps for rodent-catching in the village of Khuslipurwa, Barabanki. The Government of India, with the help of WHO and the Institut Pasteur at Teheran, is carrying out an epidemiological survey and is training personnel in plague-control work in endemic areas in Uttar Pradesh.

WHO during the past four years it is now known to be possible to prepare a consistently stable vaccine, which will maintain its potency for many months at 45°C.

The first strictly controlled field trials of typhoid vaccine ever carried out are in progress in Yugoslavia, assisted by WHO, and will be concluded in May 1956. Preliminary results available at the end of 1955 show that the heat-killed phenol-preserved vaccine is

FIG. 6. TRACHOMA CONTROL IN EGYPT



In WHO- and UNICEF-assisted projects for the control of trachoma in Egypt, pupils are made responsible for treating each other with antibiotic ointment.

giving good protection. Assessment of the value of alcohol-killed and preserved vaccine must await the final results. The findings are likely to be useful for the many countries at present unable to embark on expensive large-scale environmental sanitation programmes.

Growing interest in a world-wide problem, that of trachoma and associated infectious conjunctivitis, estimated to affect about 4 million inhabitants of all continents, was registered in 1955 among the Member States. While WHO continued to supply consultants for preliminary surveys and to plan activities in the requesting countries, joint international assistance by UNICEF and WHO was continued to the pilot projects in China (Taiwan), Egypt, Morocco, Spain, Tunisia, and Yugoslavia, and a new project was started in Indonesia. Following a programme of exchange of scientific information among trachomatologists of different countries, WHO convened the second session of the Expert Committee on Trachoma in 1955 to review present knowledge on debated points of the etiology, epidemiology, therapy, and prophylaxis, to study techniques employed in the field projects, and to advise on further development of the control activities. Important progress was registered in the differential diagnosis of trachoma from various other forms of follicular conjunctivitis and useful proposals made for the much-needed standardization of epidemiological methods. The value of results obtained in the pilot projects was recognized and suggestions advanced for further activities. A programme of co-ordinated research on the virology of trachoma was started.

Among the various communicable diseases in which control methods are changing is leprosy: the present trend is to discourage permanent and indiscriminate isolation in leprosaria, and to treat leprosy like any other communicable disease, by temporary isolation of infectious cases, early diagnosis, and ambulatory or domiciliary treatment.

Because of the dearth of consultants in leprosy, WHO has been obliged to delay the granting of assistance to some of the requesting countries. The insufficient number of properly trained specialists to meet the increasing requirements of rapidly growing programmes represents a serious obstacle to further developments, and consideration is being given to the question of providing in the future satisfactory programmes for the training of the necessary staff both at the national and at the international level.

FIG. 7. YELLOW FEVER STUDY IN TRINIDAD

Since the various species of forest mosquito which carry yellow fever live at different heights, tree ladders and platforms have to be used to capture some of the species for study. This work is part of a project to control insect-borne diseases in the Caribbean area.

One of the projects which went forward during 1955 was that in Ceylon, which aims to modernize the leprosy-control programme by improving the work of the present institutions and developing a system of case-finding, domiciliary treatment, and contact surveillance. During 1955, the Organization provided a leprosy specialist and an occupational therapist for this work, as well as some supplies and equipment. The Annual Report furnishes a brief description of the year's activities:

The WHO team periodically examined patients under treatment at leprosy clinics, hospitals and colonies. A leprosy survey in Mulligama (in Uva Province) showed a local incidence of 5 per cent. A similar survey was made in parts of the Southern and Western Provinces, and arrangements made for the systematic follow-up of cases by public-health inspectors. Physiotherapy was started at the leprosy hospital at Hendala. Case-finding and domiciliary follow-up work was extended at the central clinic at Colombo.

The WHO team visited cottage industry centres to ascertain the type of occupational therapy most useful to leprosy patients.

Training courses for supervisory public-health inspectors, medical students and sanitary-inspector trainees were held at Colombo and Kalutara. Lectures and demonstrations were given to sanitary inspectors of the municipality and to fourth-year students of the medical college. Five medical officers were trained and assigned to survey and treatment work.

The meeting of a Study Group on Filariasis was convened by WHO in December 1955 at the Institute for Medical Research in Kuala Lumpur, Federation of Malaya, to review present knowledge on various problems relating to the possibility of control of this group of diseases. While emphasizing the problems posed by the differences in the biology of the species of mosquitos acting as vectors in planning vector-control measures in the various countries, the meeting advised on the present possibilities and limitations for the use of both vector and parasite control measures, and advanced useful suggestions for much-needed standardization of methods for epidemiological surveys.

PROJECTS IN COMMUNICABLE DISEASE CONTROL

Malaria

Courses and conferences

Training course, Yaoundé, French Cameroons : A six-week course, in French, for which WHO provided the expenses of participants from 11 countries or territories and the services of 15 experts.

Second African Malaria Conference, Lagos, Nigeria : This conference enabled malaria workers from most countries and territories in the Region and from Ethiopia, Somalia, and the Sudan to assess progress in malaria control since the conference in Kampala in 1950.

Conference on Malaria Control, Belgrade : A discussion of inter-country co-operation in malaria control in south-eastern Europe, in which Albania, Bulgaria, Greece, Romania, Turkey, and Yugoslavia participated.

Control projects

Afghanistan, Bolivia, Burma, Cambodia, China (Taiwan), Ethiopia, French Africa, Indonesia, Iraq, Liberia, Nepal, Nigeria, North Borneo, Paraguay, Sarawak, Saudi Arabia, Somalia, Sudan, and Syria were aided in control projects either by teams of technical personnel or by the services of short-term consultants.

Anopheles and Aëdes aegypti *eradication*

In the Caribbean area, Central America and Panama, and Colombia, the Dominican Republic, Haiti, and Mexico, malaria eradication is combined with the eradication of the yellow fever vector *Aëdes aegypti*. WHO aid is largely in the form of the services of technical personnel.

Strengthening of malaria-control services

In Indonesia, WHO, through the services of expert personnel, is assisting in the improvement of the national malaria programme and in the extension of the facilities of the Malaria Institute, Jakarta. Similar aid is being given to Burma, where a WHO malariologist is acting as adviser to the Government in stregthening the Malaria Division of the Central Government. A WHO team has also been helping to expand the East Africa Malaria Unit at Amani, Tanganyika, into the East Africa Institute of Malaria and Vector-borne Diseases.

Tuberculosis

Courses and conferences

Istanbul: Two post-graduate training courses, one for tuberculosis physicians, and the other for tuberculosis nurses, were held at the International Antituberculosis Training and Demonstration Centre in Istanbul. WHO contributed five lecturers and awarded 21 fellowships.

Tuberculosis Teaching Centre, National Institute of Health, Guayaquil, Ecuador: A six-week course was given for which WHO awarded fellowships to students from Bolivia, the Dominican Republic, Haiti, Guatemala, Panama, and Paraguay.

Advisory Group on Tuberculosis Control, Luxembourg: This group, composed of tuberculosis public-health officers, epidemiologists, clinicians, statisticians, and public health administrators, reviewed present methods in tuberculosis control.

Control projects

Survey teams were sent to East Africa and West Africa to collect reliable field data for planning control programmes.

The following countries were given aid in developing or expanding tuberculosis-control services and in training staff: Burma, Ceylon, China (Taiwan), Greece, Iraq, Lebanon, Saudi Arabia, Sudan, and Yugoslavia. The countries of South-East Asia were assisted in developing laboratory work in connexion with the expansion of their tuberculosis services.

Tuberculosis control demonstration and training centres continued to receive WHO support in Afghanistan (Kabul), Burma (Mandalay), Ceylon (Colombo), Egypt (Cairo), India (Nagpur and Madras), Indonesia (Bandung), Iran (Teheran), Israel (Jaffa), Pakistan (Dacca and Karachi), and Syria (Damascus). Most of these centres aim " to survey the extent of the tuberculosis problem; to establish a tuberculosis service; to train personnel in diagnosis and prevention ". WHO is providing international technical personnel to assist all these centres.

BCG vaccination

Large-scale tuberculin testing and BCG vaccination were applied in projects in Cambodia, Ceylon, Colombia, Egypt, Ethiopia, India, Indonesia, Iran, Iraq, Jordan, Libya, Pakistan, Paraguay, Philippines, Somalia, Sudan, Surinam, Thailand, and Viet Nam. UNICEF also aided in these programmes, except in Somalia, where aid is given under Technical Assistance. A BCG statistician, who formerly worked at the Tuberculosis Research Office, Copenhagen, prepared a summary report on the UNICEF/WHO-assisted BCG campaigns in the Americas. BCG assessment teams visited campaign sites in the South-East Asia, Eastern Mediterranean, and Western Pacific Regions, to assess the results of campaigns and to prepare the way for future work.

Treponematoses and Venereal Infections

Conferences, courses, and research

International Conference on Yaws Control, Enugu, Eastern Nigeria: This conference was attended by 53 participants from 30 countries and all the regions.

Port Demonstration and Training Centre for Control of Venereal Diseases, Rotterdam: A report was prepared summarizing the conclusions of the study groups as reflected in two international training courses held at the Centre, and intended for use in venereal-disease-control centres in major seaports. The issue of this report will conclude the project.

International Treponematosis Laboratory Center, Johns Hopkins University, Baltimore, Md.: A further grant was paid to the Center as a contribution to certain research on the biology of the treponematoses,

including immunological studies, development of tests, and similar activities under the WHO programme of research co-ordination in this field.

Course on dermatology and venereology at the University of Madrid: WHO assisted in the organization of a post-graduate course on dermatology and venereology, as part of a project against syphilis in Spain.

Control projects

Yaws control was the object of WHO-aided campaigns in the British Cameroons, the Caribbean area, Fiji, Gold Coast, Haiti, India, Indonesia, Laos, Liberia, Malaya, Netherlands New Guinea, Nigeria, Solomon Islands, Thailand, and Western Samoa. In Bechuanaland, a pilot project against endemic syphilis was continued. In Iraq and Syria, efforts were likewise directed against endemic syphilis; in the former country, WHO aid consisted of the services of a short-term consultant who visited certain areas to help evaluate the work done since the project started in October 1950 (WHO and UNICEF aid ended in December 1952) and to make recommendations for future work.

The Organization assisted in venereal-disease-control programmes in Burma, China, Ethiopia, India, Iran, Morocco, and Saudi Arabia.

Zoonoses and Veterinary Public Health

Zoonoses

General: The Organization is helping to develop zoonoses-control programmes in Argentina, Chile, and Uruguay.

Rabies: In July 1955, a course was held in Muguga, Kenya, to study the latest and probable future trends in rabies control. It was attended by 40 medical officers and veterinarians from African countries and territories. Work was continued on inter-regional field trials in rabies treatment, in which laboratories in five countries are collaborating. In the Americas, rabies-control efforts proceeded in an international programme which was initiated some years ago (see page 94).

Brucellosis: The fourteen FAO/WHO brucellosis centres continued their work on standardization of diagnostic tests, bacteriological studies, investigations on human therapy, vaccines for the prevention of the disease in animals, and studies on the pathogenesis of brucellosis.

Leptospirosis: In November 1955 a Study Group on Leptospirosis, with FAO participation, met in Amsterdam to consider laboratory problems concerned with the diagnosis of leptospirosis and typing of the organism. The Group recommended the establishment of reference leptospirosis laboratories to serve various regions of the world in assisting laboratories in them to make epidemiological surveys and to serve as reference centres for typing of the leptospira organism. It is expected that more uniform techniques and interpretations of tests will be accomplished through these reference centres.

Veterinary public health

A seminar on meat hygiene was held in Alexandria, Egypt, in July 1955. WHO provided two consultant instructors and granted 12 fellowships for participants from Ethiopia, Iran, Iraq, Jordan, Lebanon, Saudi Arabia, Sudan, and Syria.

An advisory group on veterinary public health met in Geneva in June 1955 to advise on the development of veterinary public health work in Europe, to discuss the principal problems involved, and to recommend control procedures.

Virus, Rickettsial, and Other Communicable Diseases

Poliomyelitis: Training courses, Copenhagen and Paris: These courses, assisted by WHO, gave instruction to physicians and nurses in the management of poliomyelitis patients with forms of the disease dangerous to life.

Poliomyelitis centres: These centres collect and study strains of poliovirus from different parts of the world; undertake epidemiological studies for the eventual use of vaccines; and train virologists in the latest tissue-culture techniques.

Influenza centres: The centres continued to collect and study strains of influenza virus from different parts of the world; watch for outbreaks of influenza, and classify the type of virus so that the appropriate vaccine might be prepared; undertake epidemiological studies; and train virologists in influenza techniques.

Virus Centre, Huipulco, Mexico, D.F.: WHO is providing supplies and equipment for this centre, which is being set up in order to learn more about virus diseases in Mexico.

Smallpox: In a project to improve production of smallpox vaccine in the Eastern Mediterranean Region, WHO provided freeze-drying apparatus to laboratories in Iran, Pakistan, and Syria.

Plague: International assistance was given in 1955 to the carrying out of a common programme of epidemiological research on sylvatic plague in the Middle East, in which interest was shown by the Governments of Iran, Iraq, Syria, and Turkey; another international team collaborated with the national public health authorities in India to carry out an epidemiological survey on this condition in Uttar Pradesh.

Bilharziasis: Control projects were continued in Egypt, the Philippines, and Syria, and begun in Iraq. The Philippines project is a pilot study, designed to investigate the relevant problems and to determine the most effective and economical means of control. In Syria, bilharziasis control has been combined with malaria control. The snail identification centres in Paris, Copenhagen, and Salisbury continued their work on vector determination.

Leprosy: The Organization assisted in leprosy control in Ceylon, Indonesia, Iran, Iraq, Paraguay, and the Caribbean area. (For information on the Ceylon project, see page 98.)

Trachoma and associated infectious conjunctivitis : Important achievements were obtained in various pilot projects carried out in different countries. In China, for example, the programme for the examination, diagnosis, and treatment of all the schoolchildren was successfully carried out, covering more than 1 557 620 schoolchildren examined and 1 122 582 put under treatment. At the end of 1955, 576 847 were recognized as already cured, while more than 400 000 were still undergoing treatment. Studies on the long-term evaluation of this programme for the control of trachoma among all the population and attempts to extend the treatment to all the family contacts of the schoolchildren are the further aim of this programme.

In Morocco the possibility of satisfactory control of the yearly epidemics of infectious conjunctivitis through a mass prophylactic treatment of the population was confirmed, while new evidence on the effect of this treatment on the associated trachoma was collected and simple treatment schedules were satisfactorily introduced. The programme for the integration of the anti-trachoma campaigns into the picture of the normal public health activities of the country by progressively educating the population towards a prophylactic family autotreatment was continued in 1955, covering about 500 000 inhabitants of different districts. The countries to which WHO consultants were supplied for preliminary surveys in 1955 included Algeria, Iraq, Lebanon, Morocco, Spain, Tunisia, Turkey, and Yugoslavia. The imperative need for training ophthalmologists in the public health control aspects of this group of diseases is emphasized.

Yellow fever: A survey of yellow fever was made in Ethiopia between January 1954 and February 1955. WHO gave a grant to the Institut Pasteur, Addis Ababa, whose staff undertook the survey.

Ankylostomiasis: The epidemiology of ankylostomiasis was studied in Syria, and plans were drawn up to control the disease by improved environmental sanitation and other means.

Trypanosomiasis: A project in trypanosomiasis control in Sudan aims to organize both emergency measures for control, by chemoprophylaxis in the first instance, and to plan permanent control measures.

Relapsing fever: Assistance was given to research carried out in Tunisia and Ethiopia to compare the local strains of the louse-borne form of this disease, in an attempt to study the possible origin of the epidemics which have, on repeated occasions, seriously affected the population of large areas of east, central, and north Africa, the Middle East, and eastern and southern Europe. Strains were successfully isolated in Ethiopia and are now under observation at various institutes in Europe and Africa.

Arthropod-borne diseases: A team was provided by WHO to survey arthropod-borne diseases in Iran for a project which includes not only the development of techniques for the simultaneous surveying of the diseases in this group present in an area and the training of the staff, but also the study of the common methods of control suitable for application under the different local conditions.

Other endemo-epidemic diseases: In Spain, a WHO consultant in leptospirosis aided in a control project, and other help was given in certain aspects of strengthening communicable-diseases-control services. In Syria, a dermatologist and an X-ray technician provided by WHO helped to set up a centre for favus control and made plans for another similar centre. A team of three WHO consultants gave lectures in a refresher course on infectious diseases in Yugoslavia; another consultant assisted in pertussis vaccine production in the same country.

PUBLIC HEALTH SERVICES

In its assistance to governments in strengthening public health services, the Organization has been able to examine some of the fundamental difficulties with which many countries are faced. Chief among these difficulties are the failure to recognize that the health administration must play an important part in a country's social and economic development, the lack of attraction that full-time service in public health has for the majority of medical graduates, and the slowness of the health services to reach certain local populations, particularly those in rural areas.

Through its area representatives, public health advisers, consultants, and field teams, WHO has given assistance to a number of countries in the Americas, South-East Asia, and the Eastern Mediterranean Region in surveying health conditions, formulating national health legislation, planning long- and short-term health programmes, training health workers, and developing local health services. The need for public health personnel has been met in some countries through integration of curative and preventive services and the use of auxiliary health workers. The Organization has assisted in the training of such workers.

In addition to direct advisory services to governments, WHO has extended to India and Puerto Rico studies, initiated in 1954, on local health administration. Preliminary investigations of three areas in Sweden, England, and the Netherlands were made at the end of 1954; and further studies into family health conditions were begun in 1955 in two of the areas.

A meeting of the Study Group on Measurement of Levels of Health was held in October 1955 to consider present knowledge of this subject and suggested possible health indicators based on available statistical information. Such health indicators are needed for guiding the development of national health services.

Nutrition

Malnutrition and under-nutrition in infants and young children remained one of the principal concerns of WHO in its nutrition programme in 1955. In addition to making grants to nutrition institutes for the study of protein malnutrition, the Organization participated in a conference on this subject which was held in Princeton, N.J., USA, under the joint sponsorship of FAO, WHO, and the Josiah Macy Jr Foundation. A consultant was sent to Central America to investigate social conditions and attitudes that seem to contribute to protein malnutrition.

A study of anaemia was begun which is to include a compilation and critical analysis of the existing information on anaemias, particularly in relation to the importance of parasitism and dietary insufficiency in their etiology; inquiries were initiated in India and in Mauritius—both countries in which anaemia is a significant cause of morbidity and mortality.

A monograph on endemic goitre was prepared, for publication in 1956.

More information on WHO's work in nutrition during the year will be found in the project list on page 108.

Mental health

Two obstacles continued to stand in the way of development of mental health work: the world shortage of adequately trained personnel, and the lack of understanding of the basic causes of mental ill health. Emphasis in 1955 was again on making mental health

work part of the public health services, on training personnel, and on studying the mental health problems of children.

A number of studies were continued during the year: a third meeting of the Study Group on the Psychobiological Development of the Child was held; a study on the electrophysiological aspects of child development, initiated in 1954, went forward; and a grant was again made to the British Medical Research Council's Group for Research in Infantile Malnutrition for study of electrophysiological and psychological changes in children suffering from kwashiorkor.

A study group on juvenile epilepsy was convened in London in October to discuss the physiological, paediatric, genetic, and public health aspects of juvenile epilepsy and to consider the establishment of community programmes for epileptic children. There was also a meeting of an expert committee on psychiatric nursing, which made recommendations concerning the training of nurses for work with mental patients and means of raising the standards and prestige of this branch of nursing.

In addition to the above activities, the Organization's mental health programme included direct services to certain governments, through consultant services and the award of fellowships (see page 109).

Maternal and child health

The many requests that WHO received during the year for assistance in developing health services for mothers and children showed that many governments were willing and prepared to give increased support to this work.

Different approaches to problems in maternal and child health have become evident in WHO-aided field projects: in some countries, maternity care has been selected as the starting-point and emphasis given to training of midwives and of traditional birth attendants; in other countries, auxiliary health visitors have been considered the most practical and effective means of raising the standard of child care; and, in still others, there has been a trend towards developing health programmes for mothers and children as part of a comprehensive public-health service, often for a rural area. The chief handicap, regardless of the approach, is lack of trained personnel, particularly for teaching, supervisory, and administrative posts. A large part of WHO's work has therefore been devoted to aiding in the establishment or expansion of programmes for training professional and auxiliary workers.

An interesting illustration of the type of work done in WHO-assisted maternal and child health projects is afforded by that in Taiwan, which is described at some length in the Annual Report:

> The maternal and child health project in Taiwan... began in the autumn of 1952 with assistance from UNICEF and WHO in the provincial town of Taichung, some distance from Taipei... A doctor, a public-health nurse and a midwife set up a demonstration centre at which to teach and to work with the counterparts selected by the Government until they formed an effective team...
>
> In January 1953 the training of nurses and midwives began. Some were selected as supervisors and given an extended course of training, the others came to the centre for two months' lectures, demonstrations and work under supervisors... Only a few doctors could be trained, because the paediatrician who came with the other members of the team in 1952 could stay for only one year and it was another year before her successor arrived. By January 1955 the four-week courses for doctors were well under way and by July doctors as well as nurses had been trained from each of the seventy-seven health stations that had been included in the scheme. Particulars of the training courses held up to the end of 1955 and the number and type of students trained are shown in the following table:

Type of student	*Courses held*	*Duration*	*Number of students*
Medical officers	9	4 weeks	96
Nurse/midwife supervisors	4	4 months	23
Nurse/midwives	9	8 weeks	145
Student nurses	10	7 weeks	91
Medical students *	—	4 weeks	19

* discontinued

A three-day seminar was also held for the health directors of the twenty-two health stations in Taichung.

At the end of 1955 three members of the national team were studying abroad with WHO fellowships and two of the supervisors were in Japan with fellowships from the United States International Co-operation Administration.

At the demonstration centre in Taichung are held pre-natal and post-natal clinics, well-baby clinics, classes for pre-school children; mothers' classes and immunization clinics are held once or twice a week and are very popular with the parents in the district. The staff of the demonstration centre help the students, doctors and nurses in their work with patients, and with health education in the clinics and in the homes. The students attend and take part in the regular "Lin" meetings—meetings held in each neighbourhood unit where doctors and nurses talk on health problems. Emphasis throughout the training is on the development of a warm co-operation between staff and parents, and on the personal participation by each student in each part of the training. Supervisors have been trained to show the students how the lessons learnt in the course and at the demonstration centre can be put into practice and adapted to conditions in the health stations.

At this stage it is difficult to assess the long-term effects of this project. One success of the first three years of work is that the Government has prepared a plan for a five-year extension of the project to cover all the health stations in the island and the first members of the staff of these health stations have already been to Taichung for their training.

As in previous years, many of the WHO-aided programmes in maternal and child health also enjoyed UNICEF support.

Nursing

WHO's programme in nursing helps governments to establish or improve training for nurses and midwives and to improve nursing services in general. To this end, the Organization assists in training activities of various types in many parts of the world.

In 1955, 38 nurses and midwives were added to the WHO staff, and at the end of September, 185 were engaged in country programmes. Fifty-six of the nurses were assigned to work with national counterparts in projects in basic nursing education.

Increasing attention was given to the training of midwives, and an expert committee on this subject was convened. Psychiatric nursing, too, received particular attention.

In addition to working in field and educational projects, WHO-appointed nurses aided the national health administrations of five countries in planning nursing services.

The nurses' training project in Pakistan gives an idea of the nature of the work and the problems involved in such projects:

After a survey of nursing in Pakistan in 1951, the nurse training project... was started at the Medical College Hospital in Dacca in the following year. UNICEF supplied the equipment required for teaching and for the maternity and paediatric departments of the hospital. WHO provided three nurse educators and five fellowships for advanced study for Pakistani nurses.

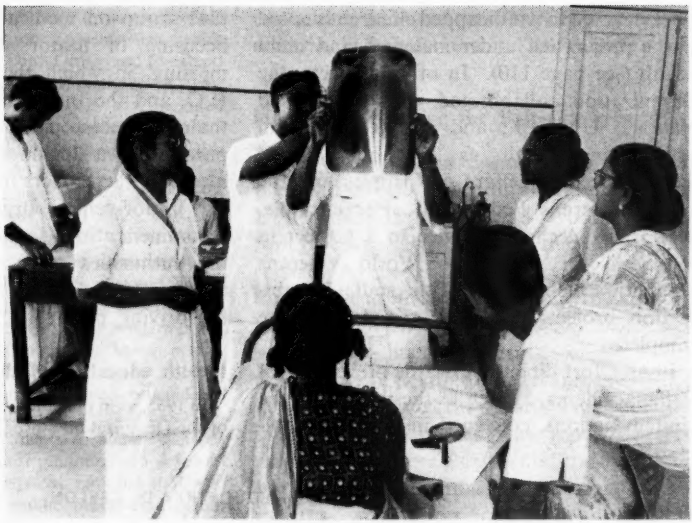
The aim of the project is to strengthen nursing in East Pakistan by providing more nurses; by training nurses as instructors and administrators; by revising the curriculum to meet the health needs of the people; and by advising the Government on all matters pertaining to nursing.

The Medical College Hospital, the largest and the best teaching centre in East Pakistan, had very limited facilities for teaching and for nursing. Six hundred patients were crowded into space intended for 500, and 400 medical students were receiving instruction in the wards. Fifteen trained nurses were attempting to cope with the administrative demands of twenty-three wards and departments and the educational needs of the student nurses. Only two of the trained nurses had had more than two years' experience, and none had had any type of post-basic education.

There were sixty-four student nurses. The minimum educational requirement for entrance to the school was a sixth-standard pass. Most of them had had less than eight years of general education. The annual losses of students, from voluntary withdrawals, ranged from 60 to 65 per cent.; the average annual output of trained nurses was less than ten.

The immediate needs seemed to be: to improve the facilities for training; to keep student nurses in training; and to develop a public relations programme to encourage women to enter for training. These were necessary steps before there was any hope of revising curricula or raising standards of education.

FIG. 8. TUBERCULOSIS CONTROL AND TRAINING INSTITUTE, DACCA, PAKISTAN



Discussion of a clinical case during a training class for doctors at the Institute.

Many changes have taken place since the project was started. The hospital has been completely remodelled, and the facilities for nursing greatly improved. The assistance of the public has been solicited, with the result that amenities have been provided for the nurses and that they have better living quarters.

Public interest in nursing is gradually growing. There are only ten more students so far, but the minimum educational requirement for entrance has been raised to a ninth-standard pass, and most students are at least of university matriculation standard; there are practically no voluntary withdrawals.

The Government has increased the number of posts for trained nurses from twenty-six to fifty-six. Most of the trained nurses have had an " in-service " course in ward management and supervision. Five have been trained as nurse educators and of these two have been abroad on study fellowships. Two Pakistani nurse educators capably manage the school and are carrying on a recruitment programme.

The curriculum has as far as possible been revised to correlate theory and practice. Public-health instruction has been included and plans made for practical work in public health. One international nursing arts instructor has been replaced by a nurse educator in midwifery. With her assistance and the co-operation of the maternal and child health and tuberculosis teams it is hoped that the public-health work can be further extended...

Social and occupational health

In its programme in the organization of medical care, WHO has given advice to governments on hospital administration and management, modern hospital construction and design, and the improvement of specific hospital services. For example, in 1955 Turkey was aided in comprehensive hospital construction and administration; and a number of countries were assisted in developing special hospital departments—Iran, an X-ray department; Ceylon, Jordan, and Saudi Arabia, anaesthesiology departments; and Saudi Arabia, a blood bank. Israel was assisted by a short-term consultant in planning services for chronic diseases.

The Organization continued to promote interest on the part of national administrations and of the medical profession in problems of occupational health, and to assist in training personnel for industrial health services.

Rehabilitation of the physically handicapped received its share of attention. The

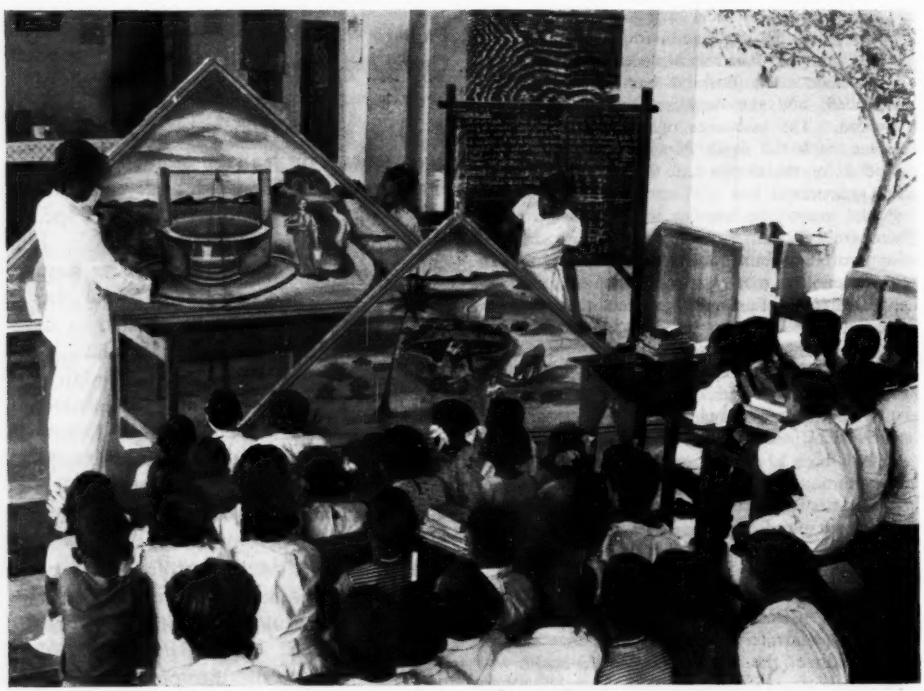
work devoted to handicapped children is noted in the project list under maternal and child health (see page 110). In other projects, the Organization collaborated with the United Nations, UNICEF, and non-governmental organizations such as the International Society for the Welfare of Cripples and the World Veterans Federation. For example, WHO gave technical advice in a project in Indonesia for which the World Veterans Federation met the cost of the staff. Rehabilitation projects in India and Israel were completed.

In an effort directed towards prevention of traffic accidents, WHO, at the request of the United Nations, convened in 1955 a consultant group on medical requirements for the licensing of motor vehicle drivers. This meeting, in which the United Nations, the ILO, and the International Council of Ophthalmology also participated, led to the preparation of a document for the guidance of medical practitioners in examining applicants for motor-vehicle driving permits, and to recommendations for the guidance of licensing authorities on methods of determining the mental and physical fitness of applicants for driving permits.

Health education of the public

In 1955, as in previous years, the principal objective of the Organization's programme of work on health

FIG. 9. HEALTH EDUCATION IN CEYLON



Bright, painted panels used in a primary school in a small town, to illustrate environmental sanitation.

education of the public was to help those responsible for national health programmes to organize health education for the public on sound lines, and to extend the practical use of educational methods in their public-health services. This work has included assistance in the organization and conduct of seminars and conferences and of training courses in health education, the granting of fellowships, the provision of international health educators to work with national health departments, and of short-term consultants to meet special requests.

WHO co-operated with seventeen governments in planning and developing local and national health education work as part of public-health programmes, and with twenty-one governments in preparing for national or inter-regional seminars on health education of the public.

In 1955, many programmes were consolidated and the results of previous work became more apparent. The health departments of some countries now employ, in the technical planning and development of health education services, national staff who have received training in public health and health education, either through WHO fellowships or with the help of bilateral agencies. In other countries, national staff so trained have been appointed by the national authorities to public-health institutes to assist in developing training courses in health education for medical and public health workers, and to provincial or state health services.

WHO gave aid in training projects for health education of both professional and auxiliary health workers. Post-graduate courses were organized in institutes and schools of public health; the Organization took part in several local and national conferences and training seminars on health education of the public ; and questions of health education were considered at three important technical conferences—on yaws, malaria, and environmental sanitation.

Health work among the Palestine refugees

The Organization continued in 1955 to plan and direct the health programme of the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), providing the services of a full-time medical officer, a malariologist, a public health engineer, a health educator, and several part-time consultants.

The general health of the refugees remained good throughout the year. None of the quarantinable diseases was reported. The main diseases were gastro-enteritis, dysentery, trachoma, and conjunctivitis during the hot months, and upper respiratory infections during the rest of the year. A high level of immunity was maintained by prophylactic immunization: 257 200 TAB inoculations, 58 000 diphtheria inoculations, and 952 000 smallpox vaccinations were performed. There was a marked decline in the number of reported cases of clinical malaria.

Nutrition, environmental sanitation, and personnel training programmes were continued.

The personnel of the Health Division at the end of June 1955 numbered 3050. Of these, 19 were international employees, and the rest, local employees, mainly Palestine refugees.

PROJECTS IN STRENGTHENING PUBLIC HEALTH SERVICES

General Assistance to Health Administrations

Seminar

Public Health Seminar, Eastern Mediterranean Region: Senior public-health administrators from Aden, Cyprus, Egypt, Ethiopia, French Somaliland, Iran, Iraq, Jordan, Lebanon, Libya, Saudi Arabia, Somalia, Sudan, Syria, and Yemen were convened to discuss common health problems.

Improvement and expansion of health services

Improvement of health administration and expansion of health services: WHO aid, largely in the form of services of advisers and other personnel and the award of fellowships, was given to Afghanistan, Burma, Cambodia, Ethiopia, Iran, Paraguay, Saudi Arabia, Viet Nam, Yemen, and Yugoslavia.

Development of rural or other local health services: Emphasis was on rural or provincial health development in projects in Afghanistan, Barbados, Burma, Ceylon, Colombia, Ecuador, Egypt, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Peru, Thailand, Uruguay, and Venezuela. In Egypt and El Salvador, work was continued in demonstration and training areas where model services are being established and personnel trained. A similar approach is being used in projects in Guatemala, Haiti, Peru, and Venezuela. In the Andean highlands of Bolivia, Ecuador, and Peru, WHO is taking part in a " joint field mission on indigenous populations " with the United Nations and the other specialized agencies.

School health services: Iran and Thailand were assisted in the development of school health services.

Dental health: In Indonesia, a consultant surveyed the dental health needs and began to prepare recommendations for a programme to raise the standard of dental health. In Switzerland, a consultant assisted in planning and initiating school dental health services based on mobile clinics in a mountainous region.

Nutrition

Courses and conferences

FAO/WHO Nutrition Course, Marseilles: This course, in French, was the second course of its kind for medical officers, pharmacists, chemists, and veterinarians who are to work in Africa. WHO awarded 18 fellowships for participants from Angola, Belgian Congo, French West Africa, Madagascar, Morocco (French Zone), Mozambique, and Somalia.

FAO/WHO Nutrition Education and Health Education Seminar, Baguio City, Philippines: A conference attended by more than seventy participants from the Western Pacific and South-East Asia Regions.

Study Group on Atherosclerosis and Ischaemic Heart Diseases: This group considered, among other subjects, the relationship between habitual diet and degenerative heart diseases.

Aid to nutrition institutes

Grants were made to the Nutrition Research Laboratories of the Indian Council of Medical Research, Coonoor, to the British Medical Research Council's Group for Research in Infantile Malnutrition, Kampala, Uganda, and to the Institute of Nutrition of Central America and Panama, Guatemala City, to enable them to continue investigations on protein-rich foods.

Institute of Nutrition, Jakarta, Indonesia: Protein malnutrition syndromes, in particular, were studied; and in-service training programmes were started for dietitians and other health personnel. Surveys were made on the public health aspects of malnutrition, and a WHO sociologist who visited Indonesia in 1954 assisted in an inquiry into some of the factors other than poverty which contribute to child malnutrition. The Organization provided a medical nutritionist and two international twelve-month fellowships for work in connexion with this project in 1955.

Nutrition Institute, University of Teheran, Iran: WHO assisted in the first phase of the establishment of a nutrition institute as part of this university.

Projects

Burma: An intensive effort is being made to reorganize the nutrition services and carry out a nutrition programme. WHO has provided a medical nutritionist and a biochemist technician, as well as some supplies and equipment.

Uganda: A medical officer and a nutritionist were assigned to a project in Uganda which aims to determine the state of nutrition of representative population groups in suitable parts of the country and to assess the connexion between local dietary customs and any nutritional defects that may be found.

Morocco: Fellowships were awarded as a contribution to an effort to improve child nutrition.

Mental Health

Seminars, courses, and other meetings

Seminar on Mental Health, Uruguay: WHO provided three short-term consultants, 25 fellowships for participation, and some supplies and equipment for this seminar for child psychiatrists and paediatricians working in mental health in the Latin American countries.

Seminar on Children in Incomplete Families, Germany: This seminar, organized by the European Office of the United Nations Technical Assistance Administration and the German Federal Ministry of the Interior, was attended by a WHO temporary adviser who gave lectures and led discussion groups.

Course for personnel dealing with children deprived of a normal family home, Paris: WHO awarded a fellowship to a Spanish physician to attend this course, which was organized by the International Children's Centre.

Refresher course in psychiatry, Copenhagen: A WHO consultant gave a refresher course in psycho-analytic therapy to Danish psychiatrists and supervised other work for five weeks.

Advisory Committee on Mental Health Problems of Displaced Persons, Geneva: This group studied a report on a pilot survey carried out in Austria on the mental health problems of long-term refugees in camps, especially children.

Study Group on Mental Health through Public Health Practice, Monaco: WHO met the expenses of 19 participants from Austria, Finland, France, Germany (Federal Republic), Italy, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, and Yugoslavia, who examined the practical problems posed by the need to introduce principles of mental hygiene into the practice of public health and medical care.

Projects

Development or strengthening of mental health services: Aid was given to projects in Austria, Burma, Ceylon, China (Taiwan), and Thailand. This aid consisted largely of the assignment of short-term consultants to make surveys and draw up plans.

All-India Institute of Mental Health, Bangalore: A psychiatric nurse and a neurologist-electrophysiologist were appointed to help establish a post-graduate training programme in psychology, mental hygiene, psychiatry, and psychiatric nursing, and a programme of research in psychiatry, neurology, and neuro-surgery. National counterparts are to be trained to take over from the WHO personnel.

Mental Health, Bethlehem Hospital, Jordan: A mental health expert and a hospital architect were assigned to a project to improve and expand mental health services, particularly to increase facilities at the Bethlehem Mental Hospital.

Studies

Mother and child separation study, United Kingdom and France: Financial support continued to be given to this study, which began in November 1952.

Survey on alcohol problems in Europe: A grant from WHO is assisting the Institute for Research on Problems of Alcohol to collect and systematize material on selected aspects of the problems of alcohol in European countries.

Maternal and Child Health

Courses and conferences

Course on the medico-social problems of the mother and child, Paris: This course, held at the International Children's Centre, was attended by social workers and public-health nurses. WHO provided nine fellowships for public-health nurses from Denmark, Finland, Germany (Federal Republic), Morocco (French Zone), the Netherlands, Norway, Portugal, Sweden, and Switzerland.

Course on social paediatrics (for medical officers), Paris: This course was also organized by the International Children's Centre. Eight trainees from Denmark, Finland, France, Morocco (French Zone), the Netherlands, Portugal, Sweden, and Switzerland attended with WHO fellowships.

Course on the medical, social, and educational problems of children suffering from sensory disabilities, Paris: Two WHO fellows, from Greece and Tunisia, attended this course at the International Children's Centre.

Study meeting on neonatal problems: A meeting organized by the School of Puericulture of the Faculty of Medicine in Paris, at which two WHO consultants gave lectures.

Projects

Improvement and/or expansion of maternal and child health services: WHO aid, largely in the form of services of expert personnel and the award of fellowships, was given to projects in Afghanistan, Cambodia, China (Taiwan), Hong Kong, India, Indonesia, Nigeria, Spain, Thailand, Turkey, Viet Nam, and Yugoslavia.

Maternal and child health demonstration and training centres: These continued to receive WHO assistance in Iran, Iraq, Jordan, Libya, Pakistan, and Syria.

Maternal and child health/nursing, India: Projects combining the development of maternal and child health services with the training of nursing personnel were aided in Travancore-Cochin, Uttar Pradesh, Bihar, Hyderabad, Madhya Pradesh, Bombay, and Saurashtra. Post-graduate and refresher courses in maternal and child health and public-health nursing were begun in Calcutta and Ludhiana.

Rehabilitation of handicapped children: Programmes were continued in Austria, Greece, Israel, Italy, Lebanon, and Yugoslavia.

Premature infants: The care of premature infants was the object of WHO-aided projects in Chile, Egypt, and Italy.

Nursing

Courses, seminars, study groups

Refresher course in paediatric nursing, Burma: A course for teachers of paediatric nursing, held at the General Hospital, Rangoon.

Refresher course, India: A course, in Hyderabad, attended by 16 instructors of auxiliary nurses and midwives. Particular attention was given to domiciliary nursing.

Short-term refresher courses for nurses, India: Two courses were given: one in Bombay, with 17 students attending, and the other in Trivandrum, with 14 participants. The courses included discussions, field visits, and practical training.

Nursing Education Seminar, Fiji: A seminar for the Western Pacific Region, for which WHO provided 4 consultants and 7 nurses and met the expenses of 40 participants.

Study Group on Basic Nursing Curriculum, Brussels: The principles of a basic nursing curriculum, its content, applications, and evaluation were studied by a group composed of members of various disciplines. WHO provided a consultant organizer and met the expenses of 13 participants from 10 European countries.

Education projects

Training programmes: Assistance was given, largely through the services of nurse educators, in training programmes of varying scope and nature in Bolivia, Burma (3 projects), Cambodia, Ceylon (2 projects), China (Taiwan), Costa Rica, Cyprus, India (3 projects), Indonesia, Iran, Japan, Jordan, Libya, Malaya, Nepal, Nicaragua, North Borneo, Pakistan, Singapore, Sudan, Switzerland, Syria (2 projects), Thailand (2 projects), and Tunisia.

Advanced nursing education: Two regional projects in advanced nursing education were aided: one at the Higher Institute of Nursing in Alexandria, Egypt, and the other at the School of Public Health of the University of Chile, designed to serve Latin America.

Midwifery training: Projects were assisted in Haiti, Iran, and the Philippines.

Training of auxiliary personnel: In Guatemala, nurses were trained to serve as instructors of auxiliary nursing personnel.

Paediatric nursing: In Indonesia, a project at Gadjah Mada University, Jogjakarta, was directed towards the improvement of child care by better training in paediatrics.

Advisory services

Nurse advisers were provided to aid health authorities or other government officials in developing and improving nursing services and education in Burma, Israel, Pakistan, and Turkey.

Social and Occupational Health

Medical care

Blood bank, Saudi Arabia: A WHO expert adviser was assigned, and some equipment provided, to start a blood bank for the hospital services and to train personnel in its techniques, in Jeddah.

Cancer institute, Iran: The Organization sent an expert cancerologist and furnished minor surgical equipment and supplies to help set up a cancer institute for diagnosis and treatment, survey the incidence and character of the disease in this country, train personnel in modern treatment methods, and plan for future work.

Chronic diseases services, Israel: A study of the problem of care of persons suffering from chronic diseases was begun in Israel, with the aid of a WHO consultant.

Radiology, Iran: WHO assigned a short-term consultant to aid in installing X-ray equipment and training staff in its use at Firousabadi Hospital, near Teheran.

Occupational health

Refresher course on occupational health, Paris: WHO sponsored 13 fellows and contributed two lecturers for this course, held under the auspices of the French Ministries of Health and Labour at the National School of Public Health.

Social and occupational health, Yugoslavia: Aid has been given in the form of fellowships and provision of electronic equipment for the Institute of Industrial Hygiene, Zagreb, in a project which aims to strengthen occupational health services to meet the needs arising from the rapid industrialization of the country.

Rehabilitation

Israel: A physiotherapist tutor was provided by WHO for two years (1953-55) to assist the Government in establishing a national school of physiotherapy and rehabilitation services in the Sarafand Hospital, which cares mainly for physically handicapped children. The Organization also awarded two fellowships for this project.

India: WHO provided one physiotherapist tutor for three years, starting from 1952, and one clinical physiotherapist for one year to assist the Government in establishing a physiotherapy department and school at the KEM Hospital, Bombay.

Health Education of the Public

Field projects in health education of the public: Aid was given in Burma, Ceylon, Italy, Liberia, Libya, Paraguay, and Turkey.

Arab States Fundamental Education Centre, Sirs-el-Layyan, Egypt: A public health adviser, a health educator, and fellowships were provided for work in connexion with this centre, which is assisted primarily by UNESCO.

Americas, regional programme: An effort is being made to determine the health education needs of Mexico, Central America, Panama, and the Caribbean area; to select and train health educators; and to train various categories of public health workers in health education.

Cultural anthropology: A WHO-assigned cultural anthropologist and a health educator continued to carry out surveys and studies of current health education problems in Central America and Panama, in order to obtain basic data for adjusting health programmes to actual needs.

All-India Institute of Hygiene and Public Health: WHO assigned a consultant in health education to the faculty to assist a national counterpart in the development of training courses in health education for students enrolled in courses for the diploma of public health, for licentiates of public health, for the diploma in maternal and child welfare, and for the certificate of public health nursing.

UNRWA/WHO: WHO continued to assist UNRWA with the sponsorship of a health education training project. During the year nine students who had completed the first full course of 12 months' training were employed by UNRWA as health education workers in the Agency refugee camps. Eleven additional students completed their training in November 1955.

FAO/WHO Nutrition Education and Health Education Seminar: See page 108.

ENVIRONMENTAL SANITATION

During 1955, the Organization sought to stimulate interest in programmes in environmental sanitation by holding several seminars and symposia (see project list below). These meetings, together with various courses and aid to teaching institutions, also did much to promote the training of personnel for sanitation work.

In field projects, special attention was devoted to rural sanitation. Vector control also received particular emphasis, in view of the increasing significance of the resistance of insects to insecticides, already referred to in the section on malaria control (page 91).

Food hygiene was the subject of the fourth session of the Expert Committee on Environmental Sanitation, held during the year. The Organization continued to work with FAO and UNICEF on milk sanitation. Perhaps the most important development with regard to milk quality control and its relationship to public health was a request made by nine countries in the Americas, Europe, the Eastern Mediterranean Region, and South-East Asia for inter-agency surveys on the production, processing, and distribution of milk.

During the year WHO completed a world-wide survey, started in 1953, in preparation for the establishment of international standards of water quality and standard methods of water examination. The data collected were sent to regional groups of experts for discussion, and meetings of such groups were held in Europe and in the Eastern Mediterranean Region.

In response to many requests, the Organization began to collect similar information on the fluoridation of water in Member countries.

A manual on the composting of organic wastes for sanitary disposal and reclamation was in an advanced stage of preparation at the end of the year; and a guide on the hygiene and sanitation of airports, prepared in collaboration with the International Civil Aviation Organization, was nearly completed.

A new problem in environmental control which began to be given serious consideration is the disposal of radioactive wastes. This was one of the subjects dealt with in a course for health physicists which was held under the auspices of the Government of Sweden, the United States Atomic Energy Commission, and WHO (see page 117).

PROJECTS IN ENVIRONMENTAL SANITATION

Education and training

Training course for waterworks operators, Guatemala: A course to serve Mexico, Central America, and Panama, in which waterworks operators were trained in better methods of operating existing plants and maintaining plant equipment, and in ways of improving water quality.

National training course in sanitary engineering, Lisbon: WHO contributed two lecturers to this course, designed to give municipal and district engineers an understanding of the health implications of their work and basic information on the technical principles of modern design.

Insect control training course, Rome: A second course (the first was in 1953), organized with the Istituto Superiore di Sanità, on the control of insect vectors of disease. WHO provided fellowships for five participants from the African Region, two from the Eastern Mediterranean, and nine from Europe.

Sanitarians' training course, Cairo: A one-year course, sponsored by WHO and organized under the supervision of the Institute of Hygiene, Cairo, and of the Egyptian Ministry of Public Health, to provide training for auxiliary sanitarians for the countries of the Eastern Mediterranean Region that do not yet have their own training courses, and to staff rural health and sanitation programmes.

Seminar on Sanitary Engineering, Puerto Rico (for countries of the Americas): WHO awarded short-term fellowships for participants from Cuba, the Dominican Republic, Haiti, Mexico, and various territories of the Caribbean. It was the first seminar on this subject for countries of the Caribbean area.

Environmental Sanitation Seminar, Ceylon: This seminar was attended by 34 participants from 11 countries of the South-East Asia and Western Pacific Regions. The chief topic was the sanitary disposal of sewage and human waste.

Environmental Sanitation Seminar, Ibadan, Nigeria: A seminar for Africa, to discuss ways of improving environmental sanitation in the Region.

Symposium on the Training of Sanitary Engineers, Oxford, England: A symposium for consideration of the kinds of training that will provide the type of sanitary engineer most suitable for work in Europe.

Environmental sanitation training, Brazil, Chile, and Mexico: A training project to serve all countries of the Americas, in which sanitary engineers and auxiliary personnel are to be prepared for work in national and local health departments. The project is also intended to extend and strengthen facilities for training in environmental sanitation at the schools of public health in São Paulo, Santiago, and Mexico City.

Sanitary engineering teaching, Alexandria University, Egypt: WHO is providing a professor of sanitary engineering, a fellowship, and some library and teaching equipment in this effort to strengthen and extend teaching of sanitary engineering in the Faculty of Engineering of the University.

Public health engineering, University of Madras, India: A professor of public health engineering has been provided to help establish a department of public health engineering and to organize class and field training in this subject.

Field projects

Environmental sanitation: Projects to improve environmental sanitation were aided—largely through provision of technical personnel, fellowships, and some supplies and equipment—in Afghanistan (2 projects), Ceylon, China (Taiwan), Greece, Japan, North Borneo, Philippines, Saudi Arabia, and the Seychelles.

Insect control: A short-term consultant was sent to Israel to help in the control of flies. Another consultant assisted in the control of the tse-tse fly in Bechuanaland.

Food hygiene: A short-term consultant made a survey of food hygiene in Iran.

Special studies

Drinking-water standards: Two regional advisory groups on drinking-water standards met in 1955: one for the Eastern Mediterranean, and the other for Europe.

Sanitary engineering terms: With UNESCO, WHO continued work on an English-French dictionary of sanitary engineering terms.

EDUCATION AND TRAINING

WHO's programme in education and training included in 1955, as in previous years, assistance to training and educational institutions, awarding fellowships, and sponsoring or participating in international courses and seminars. Efforts were made to increase the effectiveness of the assistance given and to direct it more precisely to the particular purpose in view by detailed preliminary study of teaching institutions and by evaluation of the fellowships to determine how their selection and planning could be further improved. Means of raising the standard of general medical education received much attention, and stress was laid on the teaching of social and preventive medicine.

The Organization's educational programme depends on, and receives, the co-operation of teachers, scientists, and institutions throughout the world. For example, the training given to the 939 WHO fellows of 1955 is requiring the co-operation of hundreds of institutions in 74 countries and territories; and more than 400 medical teachers have supplied data on medical education.

Fellowships

The following figures give a summary of fellowships awarded in 1955. They do not include " participants " who attended educational meetings at which there was no formal differentiation between teachers and students, or those who received help with maintenance and travel costs to attend courses organized in their own country with the help of WHO.

During the twelve-month period ending 30 November 1955, 939 fellowships were awarded (754 men, 185 women) to nationals of 108 countries and territories. Of these, 667 (or 71%) were for studies in the region of origin. Three hundred and eleven fellowships (about 33%) were in connexion with group training programmes organized by WHO or with its assistance.

The chief subjects of study were control of communicable diseases (28% of the fellowships), environmental sanitation (13%), public health administration (12%), nursing (8%), maternal and child health (8%), and other specialized health services (20%). The remaining 11% were for studies in basic medical sciences, medical education, and various aspects of clinical medicine.

The Organization began in 1953 to review and appraise its fellowships programme, using follow-up and utilization reports on fellowships, submitted two years after the return home of the fellow, interviewing former fellows, and preparing an evaluation note on each one of them in relation to a list of criteria. Three of the six regional offices made evaluation studies during 1955. In Europe a test analysis was made of 70 fellowships awarded in 1950 or earlier. A summary of the findings follows:

For four of the seventy, the information available was insufficient for any conclusions. Of the sixty-six fellowships that could be assessed, fifty-six are considered to have contributed to the local, regional or national health services; ten, because of faulty selection or from failure to adjust after returning home, seemed to have produced no measurable result. Fifty-two of the fellows now hold leading positions, forty-one of them as teachers in various branches of public health, in nursing, or in clinical medicine. The kinds of contribution made by the fifty-six successful fellows were improvements in techniques or practices, the introduction of new methods or the reorganization of services. Ten of them led to the creation of new services or the undertaking of new work for which there had not previously been the necessary specialized staff.

Exchange of scientific information

Attention was focused on a continuing study of medical education in South-East Asia. This study has already proved useful to some of the countries of the Region in formulating plans for improving medical education.

In December 1955, a visiting team of medical scientists, comprising medical educators of six countries, spent four weeks at the three medical schools of Egypt. The special purpose of the team was to assist the Government in adjusting medical education to take more account of the preventive and social aspects of medicine.

Assistance to educational institutions

The programme of assistance to educational institutions was concentrated on the provision of teaching personnel for medical colleges, schools of public health, and institutes for the training of auxiliary personnel (see project list below). An idea of the expansion of this programme is afforded by the following figures representing the " teaching " months of staff provided by WHO for schools and institutes: 1952, 54 months; 1953, 175 months; 1954, 277 months; and 1955, 285 months. Among the other objectives of each teaching assignment is the training of an understudy to take over when the visiting instructor leaves; two years have arbitrarily been taken as the normal time required for this task, but there is considerable variation from place to place.

An effort is being made to help the institutions receiving assistance to develop in the way best suited to their own social environments and culture; this involves making preliminary surveys and drawing up long-term plans. Two surveys were made in 1955—one in Afghanistan, and the other in the Philippines.

In preparation for the second edition of the *World Directory of Medical Schools*, the Organization undertook to compile descriptions of medical education in 83 countries—i.e., all those in which there is at least one medical school.

EDUCATION AND TRAINING PROJECTS

Seminars and conferences

Undergraduate education conference, India: The Rockefeller Foundation and WHO assisted the Government of India in organizing the First National Medical Education Conference. The Organization also sponsored the travel and maintenance of observers from Afghanistan, Burma, Ceylon, Indonesia, and Thailand.

Seminar on teaching preventive medicine, Chile: A seminar for South American countries which provided for an exchange of ideas on the content of courses in preventive medicine, the methods of instruction, and other relevant subjects.

Aid to medical education institutions

Assistance to medical and other education institutions, mostly in the form of teaching personnel, was given in the following countries: Afghanistan (University of Kabul), Burma (Medical College, Rangoon), Cambodia (Royal School of Medicine, Phnompenh), Fiji (Central Medical School), Indonesia (Faculty of Medicine, Gadjah Mada University, Jogjakarta and Semarang), Italy (Public Health Training School, Rome), Japan (Institute of Public Health, Tokyo), the Netherlands (Public Health Training Centre, Amsterdam and Leyden), Pakistan (Dow Medical College, Karachi), Philippines (medical schools of the Manila Central University, the Far Eastern University, and the University of Santo Tomás, and the Institute of Hygiene of the University of the Philippines, Manila), Singapore (University of Malaya), Turkey (School of Public Health, Ankara), and Yugoslavia (fellowships for members of medical faculties).

Americas: A regional project was undertaken, with WHO support, to strengthen schools of medicine and public health in Latin America, by consultant services, interchange of professors, and visits by senior faculty members of the countries from which their students come.

Pharmacology, India: Professors of pharmacology were provided for the School of Tropical Medicine in Calcutta and the Seth G. S. Medical College in Bombay.

Physiotherapy, India: Aid was given in the establishment of a school at the K.E.M. Hospital, Bombay.

Preventive medicine, Paraguay: The teaching of preventive medicine was assisted through a department at the School of Medicine in Asunción.

Paediatric education, Americas: A survey of paediatric education in Latin American countries was made.

Veterinary medicine, Americas: A project was undertaken to strengthen the teaching of veterinary medicine in schools in the Region.

Anaesthesiology: Training of anaesthetists and operating-room nurses was undertaken in Colombo, Ceylon; a WHO consultant aided in a three-month project in training in anaesthesiology in Jordan; and training courses for anaesthesiologists continued to be given in Copenhagen and in Paris, with the Organization providing fellowships.

Visiting team of medical scientists, Egypt: Under WHO auspices, ten professors visited the universities of Cairo, Ein Shams, and Alexandria, worked in departments of the universities, demonstrating modern techniques and developments, and gave lectures in their specialities.

Training of auxiliary personnel

National Institute of Health, Guayaquil, Ecuador: The Organization assisted in the training of staff in general laboratory and bacteriological techniques.

School for Male Nurse Sanitarians, Kabul, Afghanistan: WHO provided a sanitarian and a nursing instructor for this school, and some supplies and equipment.

School for Health Assistants, Rangoon, Burma: A specialist in medical education and a fellowship were contributed to a project for improving the training of paramedical personnel at this school.

Refresher course for lady health visitors, Rangoon, Burma: A three-month course for health visitors, particularly in administration and supervision, in which WHO participated.

Training of auxiliary health workers, Gondar, Ethiopia: An extensive health project for which WHO has provided the services of an epidemiologist, a sanitary engineer, a public health nurse, a maternal and child health officer, and a nurse.

Medical Assistants' School, Benghazi, Libya: A WHO-appointed public health administrator will serve as school director.

OTHER ACTIVITIES AND SERVICES

Peaceful uses of atomic energy

The interest of the Organization in the health implications of the peaceful uses of atomic energy greatly increased in 1955. A specialist was appointed to advise the Director-General and to assist him in drawing up a programme of work in this field. In August, WHO presented two papers at the International Conference on the Peaceful Uses of Atomic Energy convened by the United Nations.

By the end of the year, WHO had outlined a suggested programme of work, the main features of which were:

1. Training for three main categories of workers: (*a*) specialists for protection work in atomic energy laboratories or plants (normally either physicians or "health physicists"); (*b*) public health administrators, who will have to deal with problems of radioactive waste disposal and protection of communities against radiation, in connexion with the

increasing use of atomic energy in industry; and (*c*) medical users of radio-isotopes.

2. The collection and distribution of information on the health problems of atomic energy and on the medical uses of radio-isotopes.

3. The health problems involved in the pollution of the environment by radioactive materials and in the disposal of radioactive waste from factories, laboratories, and hospitals.

4. Standardization: There is considerable need for more agreement on standards in the health aspects of atomic energy. In co-operation with organizations such as the International Commission on radiological Units, WHO intends to work towards this end.

5. Stimulation and co-ordination of research work on the health aspects of radiation, including the effects of radiation on human heredity. There would also be problems connected with research into disease induced by radiation or the excessive absorption of radio-isotopes into the human body.

In November, the Organization, in collaboration with the Government of Sweden and the Atomic Energy Commission of the United States of America, sponsored the first international training course for health physicists. It was attended by physicists and physicians specializing in radiation work, from ten countries of Europe, and covered such subjects as the general principles of health physics, supervision at reactors and radio-chemical laboratories, measuring and monitoring radiations, precautions in factories and laboratory design, and methods of waste disposal.

Epidemiology and health statistics

By the end of the third year of operation of the International Sanitary Regulations, on 1 October 1955, they had become " the health charter of international travel throughout the greater part of the world ". The Organization continued during the year to deal with difficulties in applying the Regulations and with infringements of them.

An important task accomplished in 1955 was the amendment of the Regulations relating to yellow fever. The relevant amendments, which were adopted by the Eighth World Health Assembly, will enter into force on 1 October 1956.

Several inquiries and studies on quarantine matters were undertaken, on a wide range of subjects, including vaccination against yellow fever and cholera of infants less than one year old; sanitary protection of international mass pilgrim movements; responsibility for accidents occurring during deratting operations; rodent infestation of ships; preparation of a manual on the hygiene and sanitation of airports (see page 112); and responsibilities involved in the international control of yellow fever vaccines.

With regard to epidemiological and statistical services, retrospective data were published on plague, smallpox, tetanus, dysentery, and enteric fevers. In addition, specially collected data were issued on certain causes of death: tuberculosis of the respiratory system, multiple myeloma, Hodgkins' disease, leukaemia, epilepsy, Parkinson's disease, malignant neoplasms of the respiratory system, diabetes, vascular lesions affecting the central nervous system, and diseases of the circulatory system. A number of epidemiological studies were also published —on poliomyelitis, trachoma, cholera, population developments in connexion with public health in the Far East, infant mortality, and health indices.

A Latin index of the *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death* was issued for the benefit of those countries in central and northern Europe which commonly use Latin terminology in the description of disease.

The International Conference for the Seventh Decennial Revision of the International Lists of Diseases and Causes of Death was convened in Paris in February 1955. The report of the Conference, which is to be submitted to the Ninth World Health Assembly, contains recommendations on ways of obtaining information on causes of death and illness in areas with limited medical and health facilities, and minor changes in the Classification for which a fresh edition of the *Manual* is being prepared.

PROJECTS IN EPIDEMIOLOGY AND HEALTH STATISTICS

Quarantine

Seminar on the Application of the International Sanitary Regulations, Costa Rica: A consultant, fellowships, and some supplies and equipment were provided for this regional seminar for the Americas.

Quarantine station, Jeddah, Saudi Arabia: The establishment of a quarantine station, for pilgrims to Mecca and other travellers, was completed in September 1955. The Organization's aid during the year consisted of the services of a senior quarantine officer.

Survey of quarantine system, Lebanon: A WHO consultant studied the quarantine services of Lebanon and made recommendations to bring them into line with the requirements of the International Sanitary Regulations.

Health statistics

WHO aid was given in projects to improve vital and health statistical services in Burma, Indonesia, and Yugoslavia.

Morbidity survey, Denmark: A detailed national survey of morbidity from which a survey pattern of international interest might be developed has been made, over a three-year period, with help from WHO and the Rockefeller Foundation.

Conference of rapporteurs of the different federal states of Germany: A WHO consultant participated in discussions of various problems of health statistics and health office reports.

Americas, regional projects: (1) Inter-American Centre of Biostatistics, Santiago, Chile—a training project for technical personnel for Latin American countries, with the Chilean Government offices concerned with vital and health statistics being developed to serve as model offices for demonstration purposes; (2) health statistician—the WHO statistician assigned to help improve vital and health statistics in the Americas gave advice and aided with teaching in Cuba, the Dominican Republic, El Salvador, Guatemala, Haiti, Nicaragua, and Panama; (3) Latin American Centre for Classification of Diseases, Caracas, Venezuela—a centre, designed to serve Spanish-speaking countries of the Americas and acting as a training centre and clearing-house for problems arising in the application of the Spanish edition of the *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death.*

Therapeutic substances, standardization, and health laboratory methods

The Organization continued its work under the heading of " biological standardization ", which includes: (*a*) the establishment, maintenance, distribution, and replacement of International Biological Standards; (*b*) the preparation and distribution of standard materials for the identification of *Salmonella* and *Shigella* micro-organisms; (*c*) the preparation and distribution of standard materials for the typing of blood groups; and (*d*) standardization of the histopathological diagnosis of cancer.

With regard to the last of the above functions, (*d*), a small consultant group was convened by WHO to consider what work the Organization might undertake in the field of cancer. This group made several recommendations concerning such matters

as definitions, nomenclature, criteria of diagnosis, collection of statistics, training of workers, and the dissemination of information. It was proposed that the WHO method of international reference laboratories be extended to the collection of materials and histological sections from cancers.

The English and French editions of Volume II of the first edition of the *Pharmacopoea Internationalis* were published in 1955, after integration of the comments received through the consultation of all Member States. Work on the preparation of a supplement went forward as well as on the revision of the first edition and the preparation of the second edition.

Work on selecting international non-proprietary names for pharmaceutical preparations was continued. Of the first 303 " proposed " names, 219 were accepted as " recommended " names, after opportunity had been given to those concerned to submit comments or objections. A further list of 153 proposed international non-proprietary names was prepared and forwarded to Member States in accordance with the revised procedure.[1]

[1] For further information on procedure regarding these names, see *Chron. Wld Hlth Org.*, 1956, 10, 26.

During the year, studies on the relationship between chemical, analgesic, and addiction-producing properties of certain drugs were carried out; and a number of substances were recommended for control under international agreements for the control of addiction-producing drugs.

In 1955, the Organization set up a new section on health laboratory methods, the work of which was concentrated mainly on basic problems of laboratory work, problems connected with food additives, and standards for production of yellow fever vaccine. Advice was given on public health laboratory equipment. Studies were started on laboratory problems, such as design; and plans for a manual on public health laboratory methods were made.

In September, FAO and WHO convened a joint technical conference on the use of chemical additives in food. It was recommended at this conference that uniform methods should be developed for evaluating the safety of food additives and general principles for their use formulated, and that the two organizations should collect and disseminate pertinent information and assist, as far as is acceptable and desirable, in co-ordinating investigations, to avoid duplication of research.

PROJECTS IN LABORATORY SERVICES

Strengthening of laboratory services

National drug service, Brazil: A project aiming to establish, in Rio de Janeiro, a national service for the control of chemical and biological standards, and regulations to control the sale of domestic and imported drugs.

Strengthening of laboratory services, Burma: Public health laboratories will be set up in Rangoon and Mandalay, technicians will be trained for the eight existing provincial laboratories and other laboratories to be established, and provincial laboratory services will be integrated into a programme for expanding district health services. WHO has provided the services of a microbiologist and some supplies and equipment for this project.

Public health laboratory, Iran: WHO has appointed a laboratory technician and furnished equipment to help establish a central public health laboratory and organize a public health laboratory service for the whole country.

Laboratory biological facilities, Americas: Two short-term consultants and some equipment and supplies were provided in a regional project to improve facilities in public health laboratories of Latin America, particularly as regards animal colonies and use of laboratory animals.

Vaccines and sera

Vaccine production, Afghanistan: A laboratory specialist is assisting in reorganizing, expanding, and improving facilities for vaccine production in Kabul.

Sera and vaccine production, Austria: Through a fellowship, the Organization helped in a project to improve and increase production of sera and vaccines for the protection of children.

Vaccine testing, Americas: A grant was made to the Michigan Department of Health Laboratories to help new laboratories for production of vaccines in the Americas maintain the necessary high standards of potency and safety.

Inter-regional projects

Standardization of virus and rickettsial tests: Work is under way to simplify and make more accurate screening procedures to be used in public health laboratory tests for various virus and rickettsial diseases. Laboratories of many countries are collaborating in this work.

WHO Reference Laboratories, Copenhagen, Denmark, and Chamblee, Ga., USA: These laboratories test antigens and sera, examine reference preparations, study serological methods, and train personnel.

International Shigella Centres, United Kingdom and USA: These centres, one at the Communicable Disease Center, Atlanta, Ga., and the other at the Central Public Health Laboratory, London, collect and identify *Shigella* strains, distribute strains and sera to national centres, and train workers from national centres.

International Salmonella and Escherichia Centre, Denmark: This centre, at the Statens Seruminstitut, Copenhagen, has functions with regard to *Salmonella* and *Escherichia* strains similar to those which the International Shigella Centres exercise with regard to *Shigella* strains.